

DOCUMENT RESUME

ED 248 985

PS 014 612

AUTHOR Kraus, Marcy L.
TITLE Perspective-Taking Ability: Effects of Age, Task, and Egocentrism.
PUB DATE Apr 84
NOTE 21p.; Paper presented at the Annual Meeting of the Eastern Psychological Association (Baltimore, MD, April 12-15, 1984).
PUB TYPE Reports - Research/Technical (143)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Age Differences; Cognitive Processes; Difficulty Level; *Egocentrism; *Perception; Perceptual Development; *Perspective Taking; *Preschool Children; Spatial Ability; Task Analysis; Visual Perception
IDENTIFIERS Piagetian Theory

ABSTRACT

The effects of age, task, and egocentric responding on visual-spatial perspective taking were studied among 41 preschool children between 3.0 and 5.9 years of age. Children were individually administered three perspective-taking measures: the upside-down/right-side-up task, a block task, and a picture box task, all previously described in the literature. Results revealed that older children performed significantly better than younger children on the upside-down/right-side-up task and the block task. Younger children had difficulty demonstrating understanding of their own perspective on the block task. Results further indicated, however, that only a small percentage of the responses on all tasks were egocentric and that no subject in the present study exhibited consistent egocentric behavior. Although tasks were designed to facilitate performance by minimizing response and instructional demands, some subjects had particular difficulty with certain tasks and responses within the tasks. Therefore, potential performance barriers were discussed. It was concluded that the finding of variation in children's egocentricity does not itself diminish the usefulness of a perspective-taking task; instead, it diminishes the usefulness of constructs assuming that egocentricism prevents a child from perspective taking. (Author/RH)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

☒ This document has been reproduced as
received from the person or organization
originating it.

☐ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

ED248985

Perspective-Taking Ability:
Effects of Age, Task, and Egocentrism

Marcy L. Kraus

University of New Hampshire

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Marcy L.
Kraus

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

PS 014612

Running Head: PERSPECTIVE-TAKING ABILITY

Abstract

The effects of age, task, and egocentric responding on visual-spatial perspective-taking were studied. 41 children between 3.0 and 5.9 years of age were individually administered three perspective-taking measures. The three measures were the upside down-right side up task, a block task and a picture box task all previously described in the literature. Older children performed significantly better than younger children on the upside down-right side up task and the block task. Younger children had difficulty demonstrating understanding of their own perspective on the block task. Results indicated, however, that only a small percentage of the responses on all tasks were egocentric, and that no subject in the present study exhibited consistent egocentric behavior. Although tasks were designed to facilitate performance by minimizing response and instructional demands, some subjects had particular difficulty with certain of the tasks and some responses within the tasks. Potential "performance barriers" in the tasks are discussed. Finding out that children are not always egocentric does not in itself diminish the usefulness of a perspective-taking task; instead it diminishes the usefulness of a construct which assumes that it is egocentrism that prevents a child from perspective-taking.

Perspective-Taking Ability:

Effects of Age, Task, and Egocentrism

Traditional cognitive developmental psychology from a Piagetian perspective has urged us to believe that egocentrism is a pervasive characteristic of preschoolers. In Piaget's (1926) theory which is the context in which it is typically used, egocentrism is defined as a lack of differentiation in some aspect of subject-object interaction. Failure to differentiate one's own point of view from that of others, or to coordinate multiple perspectives of an object, has, in Piagetian tradition, been considered a characteristic of the young child's functioning in virtually all spheres of activity. Accordingly, the presence or absence of egocentrism has been used to account for the presence or absence of a wide range of behaviors including egocentric speech (Piaget, 1926), effectiveness of communication (Krauss & Glucksberg, 1969), and confusion of one's own perspective with another on traditional egocentrism tasks such as the "three mountains problem" (Piaget & Inhelder, 1956).

More recently it appears from many reports that this view of the preschool child as cognitively handicapped, is overstated. By minimizing task demands and engaging the subject in a realistic game-like situation, children as young as three have seemingly demonstrated

perspective-taking skills (Borke, 1975; Brandt, 1978; Flavell, Shipstead & Croft, 1978, 1980; Flavell, Everett, Croft & Flavell, 1981; Garvey & Hogan, 1973; Gelman, 1978; Kurdek & Rodgon, 1975; Liben, 1978; Maratsos, 1973; Urberg & Docherty, 1976). This suggests that at least some of the time, when failure on these tasks occurs, it is not something that the task measures, but something in the task itself that proves difficult for the child. We might ask, therefore, several related questions: First, under what conditions is egocentrism manifested in the preschool years? Second, is performance on perspective-taking tasks (either success or failure) related to the absence or presence of egocentrism?

The present study is part of a larger study examining the relationship between perspective-taking ability and symbolic play. It was predicted that all subjects would demonstrate varying degrees of skill in perspective-taking and that age, task conditions, and egocentric responding would be related to task performance. Specifically, older children were expected to perform more correctly and less egocentrically than younger children, demonstrating the predicted decline in egocentrism during the preschool years. Simplified perspective-taking tasks minimizing verbal and communication demands were expected to maximize subjects' performance.

Method

Subjects

The subjects were 41 children divided into two age groups: 20 children were in the younger group (3 years 0 months to 3 years 11 months, mean age of 3.7); 21 children were in the older group (4 years 1 month to 5 years 9 months, mean age of 4.9). There were 8 females and 12 males in the younger group and 12 females and 9 males in the older group. The subjects were drawn from two daycare centers and through advertisements placed in local papers.

Materials

Three visual-spatial perspective-taking tasks were used. The upside down-right side up task described in Flavell, Botkin, Fry, Wright and Jarvis (1968) assesses the subject's ability to orient a picture flat on the table so that the experimenter sees the picture upside down while the subject, seated across from the experimenter, sees the picture right side up. After establishing that the subject understood the meaning of upside down or standing on one's head, the experimenter asked the subject to "show me the picture so that I can see the girl upside down" or "standing on her head."

In the picture box task devised by Flavell et al. (1968), the subject is shown two large identical boxes

with a different picture on each of four sides. The boxes are rotated simultaneously so that the subject can view and name each picture (in this case, a horse, a cat, a sheep, and a turkey) as well as establish that the two boxes are identical. The subject was asked to choose one of the boxes to use in the "game." The subject's box was placed in front of her so that she sat facing the cat. The experimenter's box was placed nearby so that only the cat on that box was visible to the subject. The subject was introduced to Ernie, the Sesame Street doll, and was told that "Ernie is going to take a walk around the block and look at all the pictures. I want you to tell me what Ernie sees as he walks around." The subject was allowed to manipulate her box to establish Ernie's position at all perspectives. Ernie was then seated next to the box, facing a picture not visible to the subject. The subject was asked to establish Ernie's perspective at this position and then the box was rotated one picture at a time and the subject was asked, "what does Ernie see now?"

The block task, adapted from Liben (1978) might be considered a less elaborate adaptation of Piaget's original three mountains task. In this task, two wooden blocks, one blue and one red, were used to create six block arrangements. Of the six, half were arranged in

a symmetrical pattern, half in an asymmetrical pattern and half were arranged so that all blocks were visible to the subject, half so that all blocks were visible to the experimenter. A symmetrical arrangement is one in which the smaller blue block is placed in the center of the larger red block; an asymmetrical arrangement would place the blue block either to the right or left of center. Since one block was larger and taller than the other, at eye level all blocks were only visible to one observer while the other observer saw only the larger red block.

Arrangements were built from back to front so that the subject could view each block placement. After the arrangement was completed, five cards, each containing a two-dimensional color representation of various block arrangements were shown and the subject was asked to "point to the card that shows the way the blocks look to you" (self view) and "point to the card that shows the way the blocks look to me" (other view). The five card choices always included the self view, the other view, an incorrect color combination, and views with left-right block reversals.

Scoring

Children were scored on a total of 22 responses across the three perspective-taking tasks. Responses

were scored either: correct (child successfully identifies the "other" view), egocentric (the child's own perspective is given for the "other's" perspective) or incorrect/nonegocentric (child gives a perspective that is incorrect but different from her own point of view). Each response could only be scored in one way. The two responses on the upside down-right side up task and the eight responses on the picture box task were scored from a checklist during the procedure by the experimenter. In the block task, the cards used to represent the different perspectives were numbered. During administration of the task, card numbers were recorded and later converted to scores by the experimenter. For each of the six arrays in the block task, two responses were required. In six of these responses, the subject was asked to identify the experimenter's perspective. These responses were scored as correct, egocentric or incorrect/nonegocentric. For the other six responses, subjects were asked to identify their own point of view. These responses could only be scored correct or incorrect. Each subject's perspective-taking score was represented as the number of egocentric responses, correct responses, and incorrect/nonegocentric responses that occurred across all tasks.

Procedure

The subjects were tested individually. The entire

procedure lasted approximately 15-20 minutes. The order in which the tasks were presented to the subjects was randomized. The general instructions given to the subjects were "I am writing a story about children and I have some games I would like to play with you to help me write my story."

Results

Effects of Age and Sex

Subjects' scores were compared using both the total number of correct responses and the total number of egocentric responses on each of the three tasks. A preliminary one-way ANOVA indicated that there were no sex differences in either correct or egocentric responding. All subsequent analyses combined male and female subjects. Six separate one-way ANOVAs were used to investigate the effects of age on task performance. The results showed significant differences in correct responding between the younger age group (mean age 3.7) and the older age group (mean age 4.9) on the upside down-right side up task ($F(1,37) = 5.57, p < .05$) and the block task ($F(1,37) = 12.15, p < .01$). In each case the older subjects were significantly better at identifying the other perspective. No such effect was found in the analysis of egocentric responses. Means and standard deviations for the tasks are shown in Table 1.

Insert Table 1 about here

The block task was the only task in the present study that measured the subjects' ability to identify their own perspective. The concept of egocentrism is based on the assumption that one first recognizes one's own point of view (self) and then gives that perspective for another's point of view (other). Therefore, results from the block task were further analyzed to investigate the effects of age on correct responding on the self view and correct responding on the other view. The results indicated that there was a significant difference between the two age groups such that the older group was better at correctly identifying both their own point of view ($F(1,37) = 9.93, p < .01$) and the perspective of the other ($F(1,37) = 10.24, p < .01$).

Analysis of Random Responding

Thirty-two 1×3 chi-squares (and twelve 1×2 chi-squares for the self view responses) were used to investigate the performance by age groups on each of the 22 task responses. The expected frequencies were calculated according to the ratio of correct, egocentric and incorrect/nonegocentric choices for each task. There was always one correct choice and one egocentric

choice for each task; however, the number of incorrect/nonegocentric choices varied among the tasks. Subjects had one incorrect/nonegocentric choice in the upside down-right side up task, two choices in the picture box task and three choices in the block task. Younger subjects performed at chance levels on the majority of the task items (16 responses out of 22 were nonsignificant) while older subjects showed a greater frequency of correct responding (16 responses out of 22 were significant, half at the .01 level).

Analysis of Subject Consistency

Within subject analyses were performed to assess individual patterns of consistency. A 70% criterion level was arbitrarily established as a dividing line between consistent and inconsistent responding; that is, any subject with 70% or more responses falling into any one scoring category was considered a "consistent" responder. No subject in this study could be classified consistently egocentric across the three tasks; 13 subjects (4 from the younger age group and 9 from the older age group) were classified as consistently correct and three subjects (all from the younger age group) were classified as consistently incorrect/nonegocentric. In fact, the mean number of egocentric responses for older subjects was 1.5 out of a possible total of 15. For the younger subjects, the mean number of

egocentric responses was 3. 67% of the older subjects and 40% of the younger subjects gave one or no egocentric responses. 28% of the errors made by younger subjects and 18% of the errors made by older subjects were egocentric; the remaining errors were incorrect/nonegocentric.

Discussion

The present study demonstrates that preschool children are not completely egocentric and that when failure on visual-spatial perspective-taking tasks does occur, the errors are most frequently nonegocentric. Younger subjects' difficulty on the block task, for example, was not related to the inability to take another's perspective; rather it appeared to be related to the inability to demonstrate understanding of one's own point of view and perform according to the task demands. As Liben (1978) has argued, "Given that young children have difficulty in answering questions about their own view, their difficulty in answering questions about another's view cannot be attributed to an inability to decenter" (p. 90).

Since no subject could be classified as consistently egocentric, it is likely that preschool age children have some degree of skill in differentiating what they can see from what others can see, and at the very least, understand when two different perspectives are present despite the inability, at times, to correctly identify

what these perspectives are. Many subjects for example, exhibited some type of "going-around-to-look" behavior by leaning over in their chairs or getting out of them to take a better look at the other perspective and spontaneously corrected their responses if allowed to do so. A strictly "pre-perspective-taker" would probably not be motivated to engage in such activity.

Although the present tasks were designed to facilitate performance by minimizing response and instructional demands, younger subjects had particular difficulty with the upside down-right side up task and the block task. In contrast, high performance by both age groups on the picture box task resulted in no significant comparisons between ages. Such differences probably suggest that perspective-taking is a multidimensional skill that develops only gradually. Even individual responses within a task, varying only according to the viewing circumstances, ranged in difficulty (e.g., differences between left and right block positions). Flavell (1974) has devised a developmental model for distinguishing among various levels of perspective-taking ability. At Level 1, for example, the child is able to infer what another person can and cannot see; at Level 2, the child understands that an object which is simultaneously visible to more than one observer, may

present a different appearance if the observer's viewing circumstances differ. Using Flavell's (1974) model in the present study, the picture box task would be considered a Level 1 task (i.e., what is important is determining "what Ernie sees" not "how does he view this object") while the other two tasks would be considered Level 2 tasks.

Although it has been common in the research to attempt to "simplify" tasks designed for older subjects to facilitate performance by younger subjects, such attempts do not always succeed. Typical means of simplifying tasks include changing the wording, using materials likely to be more meaningful and interesting for the child, eliminating the need to respond verbally, and using objects with highly distinctive sides which can be individually labeled (e.g., the picture box task). However, even when such tasks are used, children competent at Level 1 may perform poorly at Level 2 (Flavell et al., 1981). It cannot be overemphasized that it is simply not enough to use tasks that look extremely easy to the adult viewer.

Flavell et al. (1968) point out that when a child "produces a poor solution to some problem...it may not be-- and often will not be--obvious where the trouble lies" (p. 211). One such example is demonstrated in Liben and Belknap (1981) when they observed that young children's

failure to perform correctly on the block task may be partly attributed to "intellectual realism" as opposed to simply the inability to take another's viewpoint. That is, children who observe a block array while it is constructed may have difficulty "suppressing" their knowledge of what actually exists (even when it is hidden from their viewing perspective), and distinguishing it from the final product (i.e., what they see). In the present study, the younger subjects' random responding on the block task could simply be attributed to an inability to understand the task. Alternatively, Flavell et al. (1981) present evidence to suggest that there may be a point between an egocentric state and a nonegocentric state that is characterized by random responding. That is, the child is sensitive to the existence of differing points of view but for whatever reason is unable to correctly identify them. Furthermore, one could also theorize that the poor performance on the block task could have occurred because subjects mistakenly treated this Level 2 task as a Level 1 task. Maybe the task was "translated" to mean "what does the observer see?--two blocks" rather than "how does the observer view these blocks?" Therefore, any card picturing two blocks, regardless of position, is correct to the subject (Flavell, 1974). Finally, it is undoubtedly

true that the boundaries between such levels are tenuous and difficult to define. Perhaps it is possible for some Level 2 tasks to be solved using Level 1 strategies. As is clear in the present study, different tasks purporting to assess the same kinds of skills, demonstrate a number of differences.

The tasks used in the present study, although representative of Piaget's primarily visual-spatial research, do not necessarily characterize children's perspective-taking strategies in other subject-object domains. Ideally, the ability to coordinate multiple dimensions of a particular object should be identical across situations; realistically, results from the large numbers of tasks developed for the purpose of assessing perspective-taking skills vary from the minimal to the considerable. Presumably we should also expect that "real world" observations of children's perspective-taking skills vary in kind and degree from those engineered and then utilized by research psychologists specifically because they do demonstrate distinct developmental differences. Day to day perspective-taking by children occurs in much less complex contexts and under more familiar and informal conditions. Young children probably just don't voluntarily find themselves in situations significantly beyond their own capabilities very often; as Flavell et al. (1968) remark, "It is simply a fact

that children are not masochistic enough to be forever aiming at targets which their intellectual weaponry cannot reach" (p. 216).

In a review of the egocentrism literature, Ford (1979) has noted that the proportion of egocentric errors on visual-spatial measures is small at all ages. It is the proportion of incorrect/nonegocentric errors and its relation to correct responding that changes with age. The present study supports this observation. "Egocentrism" apparently plays a small role in visual-spatial measures of perspective-taking; perceptual accuracy may be a more pertinent factor. The high proportion of nonegocentric errors might suggest that young subjects are at least sensitive to the existence of different points of view. Finding out that children are not always egocentric does not in itself diminish the usefulness of a perspective-taking task; instead it diminishes the usefulness of a construct based on the supposition that it is egocentrism that prevents a child from perspective-taking.

References

- Borke, H. (1975). Piaget's mountains revisited: Changes in the egocentric landscape. Developmental Psychology, 11, 240-243.
- Brandt, M. M. (1978). Relations between cognitive role-taking performance and age, task presentation and response requirements. Developmental Psychology, 14, 206-213.
- Flavell, J. H. (1974). The development of inferences about others. In T. Mischel (Ed.), Understanding other persons (pp. 66-111). Totowa, NJ: Rowman & Littlefield.
- Flavell, J. H., Botkin, P. T., Fry, C. L., Wright, J. W., & Jarvis, P. E. (1968). The development of role-taking and communication skills in children. New York: Wiley
- Flavell, J. H., Everett, B. A., Croft, K. & Flavell, E. (1981). Young children's knowledge about visual perception: Further evidence for the level 1-level 2 distinction. Developmental Psychology, 17, 99-103.
- Flavell, J. H., Shipstead, S. & Croft, K. (1978). Young children's knowledge about visual perception: Hiding objects from others. Child Development, 49, 1208-1211.
- Flavell, J. H., Shipstead, S. & Croft, K. (1980). What young children think you see when their eyes are closed. Cognition, 8, 369-387.
- Ford, M. E. (1979). The construct validity of egocentrism. Psychological Bulletin, 86, 1169-1188.

- Garvey, C. & Hogan, R. (1973). Social speech and social interaction: Egocentrism revisited. Child Development, 44, 562-568.
- Gelman, R. (1978). Cognitive development. Annual Review of Psychology, 29, 297-332.
- Krauss, R. M. & Glucksberg, S. (1969). The development of communication: Competence as a function of age. Child Development, 40, 245-254.
- Kurdek, L. and Rodgon, M. (1975). Perceptual, cognitive and affective perspective taking in kindergarten through sixth-grade children. Developmental Psychology, 11, 643-650.
- Liben, L. S. (1978). Perspective-taking skills in young children: Seeing the world through rose-colored glasses. Developmental Psychology, 14, 87-92.
- Liben, L. S. & Belknap, B. (1981). Intellectual realism: Investigations of perceptual perspective taking in young children. Child Development, 52, 921-924.
- Maratsos, M. (1973). Nonegocentric communication abilities in preschool children. Child Development, 44, 597-700.
- Piaget, J. (1926). The language and thought of the child. New York: Harcourt, Brace & Co.
- Piaget, J. & Inhelder, B. (1956). The child's conception of space. London: Routledge & Kegan Paul.
- Urberg, K. A. & Docherty, E. M. (1976). Development of role-taking skills in young children. Developmental Psychology, 12, 198-203.

Table 1

Task Means and Standard Deviations for Correct and
Egocentric Responding by Age Groups

	Younger	Older
Task	M (SD)	M (SD)
Upside down		
Correct	.60 (.83)	1.21 (.68)
Picture box		
Correct	4.20 (1.79)	5.18 (1.73)
Block task		
Correct-self	2.55 (1.75)	4.22 (1.38)
Block task		
Correct-other	1.50 (1.72)	3.36 (1.90)
Upside down		
Egocentric	1.00 (.81)	.61 (.59)
Picture box		
Egocentric	.85 (1.20)	.29 (.74)
Block task		
Egocentric	1.20 (1.57)	.39 (.77)